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Nurturing Compassion Development among College Students:

A Longitudinal Study

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**Abstract**

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Little research exists on the development of compassion among college undergraduates. This study tracks changes in compassion and identify factors associated with these changes over the course of undergraduate students' college careers, from the time of admittance to the time of graduation. We found that 25% of the variance in compassion at the time of graduation is accounted for by compassion levels assessed at the point of college entrance, providing evidence for the notion that compassion can continue to be cultivated once in college. We found that predictors such as diversity training, the frequency of religious service attendance, participation in community based service learning, political identification, and feeling valued as a member of the university community account for an additional 10% of the variance in compassion scores at the time of graduation. Results suggest that compassion development in college students may increase through the use of particular intentional educational experiences.

Keywords: Compassion, undergraduate education, college students

Current research on compassion has focused primarily on professional caregivers such as the prevention and treatment of compassion fatigue among healthcare workers such as physicians, nurses, social workers, psychologists, and so forth (e.g., Horsburg & Ross, 2013; Shih, Hu, Lee, Yao, Chen, & Chiu, 2013). There has been very little research on cultivating compassion in educational environments and specifically among undergraduate college students (Lovette-Colyer, 2013; XXX, under review; Plante & Callister, 2015).

Many colleges and universities in the United States have highlighted their interest in character education by going beyond traditional classroom instruction to both educate and form students with a more holistic education. Holistic education is defined as an educational philosophy focused on promoting student intellectual, spiritual, moral, and social growth and “preparing (students) for leadership and service to the common good in their professional, civic, and personal lives” (Santa Clara University, n.d.). These higher education institutions, especially those that are religiously-affiliated (e.g., Santa Clara University, n.d.; University of San Diego (n.d.)), often promote mission statements that include encouraging their students to lead lives dedicated to serving others, becoming advocates for social justice, and being engaged future ethical citizens. Educational institutions dedicated to educating today’s youth acknowledge that both academic and character education is important to nurture and develop. These schools believe their commitment to the holistic education of students will foster a brighter future by influencing tomorrow’s leaders to be compassionate and engaged educated members of the global community. As such, compassion is an important character trait that many institutions of higher learning seek to cultivate (e.g., Santa Clara University, n.d.; University of San Diego, n.d.).

In many ways, the years spent in college are an excellent time to foster compassion development among young adults. Past research focusing on the growth and development of beliefs, attitudes, and values has shown that experiences during the undergraduate years have a significant and lasting impact on a person’s worldview (e.g., Feldman & Newcomb, 1969; Pascarella & Terenzini, 1991, 2005).

Previous research regarding the cultivation of compassion in undergraduate students has uncovered particular factors associated with higher or lower amount of compassion and has established that many students

do increase in compassion during their undergraduate years (Lovette-Colyer, 2013; XXX, under review; Plante & Callister, 2015). However, certainly not all students increase in compassion during their undergraduate years. A proportion of them seem to remain unchanged in assessed compassion while some even decrease in compassion over during college (Lovette-Colyer, 2013). In a 2-year longitudinal study at University of San Diego, Lovette-Colyer (2013) found that while half of the undergraduate students did display increased compassion, 15% of students remained the same and slightly over a third of the students decreased in compassion over the course of two years on campus. Lovette-Colyer (2013) also found that participation in community service was one characteristic of those who increased in compassion, but that community service learning (i.e., community service incorporated into academic classes) was associated with a decrease in compassion. However, in several cross-sectional studies students at XXXXX University, researchers found that participation in community based service learning, even community service that was required as part of an academic class, was positively associated with increased compassion scores (XXX, under review; Mills, Bersamina, & Plante, 2007; Plante, Lackey, & Hwang, 2009).

In the XXX study (under review) these researchers found a variety of predictors of compassion assessed among graduating seniors in a cross-sectional study. These included attending racial/cultural awareness workshops suggesting that diversity training and/or exposure to other cultures and perspectives may play an important role in cultivating compassion among students. Additionally, females and those who reported self-identifying as liberal on the political spectrum also tended to have higher compassion scores as well. Those students who attended religious services, those who identified as being religious or spiritual, and those preparing to go into a service-oriented fields such as healthcare also displayed higher compassion scores.

These authors found a number of factors that predicted lower compassion scores among seniors including students who placed higher value on financially-rewarding careers and reported that personal financial success was very important to them. Also, an inverse relationship between compassion and “partying behavior” was determined as well. Overall, the amount of compassion expressed tended to decrease as frequency of drinking and the reported number of hours spent partying increased. These findings were supported by Lovette-Colyer

(2013) who found that participation in Greek life was associated with decreases in compassion over the two year assessment period.

### *Purpose and Hypothesis of the Present Study*

This study examines changes in compassion over the course of four college years, from when undergraduate students entered as freshmen to when they graduated as seniors. Thus, the current research can provide a contribution to the small but important field of psychological and educational research focusing on cultivating compassion in among today's young adults and tomorrow's future leaders.

The purpose of this study was to examine changes in compassion over the course of student's undergraduate career at a university that espouses the ideals of holistic and character-based, social justice focused higher education. Specifically, this study seeks to examine whether certain elements of this holistic, character and social justice focused education, such as community service learning integrated as part of academic classes, accounts for any changes in compassion among undergraduate students over time. Due to predictions and empirical results from recent published research (e.g., Astin, Astin, & Lindholm, 2011; Lovette-Colyer, 2014; Plante, Lackey, & Hwang, 2009; XXXX, under review) we predict that female gender, "left-leaning" political beliefs, participation in community based service learning, attendance of religious services, and diversity training will be associated with increases in compassion scores while participation in Greek life and "partying behavior" will be associated with decreases in compassion. We believe that this package of influencing factors are likely to be associated with compassion development among graduating seniors when compared to their initial level of compassion as freshman.

## **Methods**

### *Participants*

As part of the within-subjects design, participants were selected based upon their successful completion of both the survey given to incoming freshman and the survey given to graduating seniors. This resulted in a sample of 491 students ( $n = 491$ ) at XXXXX University who graduated during the years of 2011-2013. Most of

these students had attended the university for 4 years, having entered the university as freshmen between the years of 2007 and 2009.

Females ( $n = 312$ ) made up 63.5% of the sample while males ( $n = 177$ ) accounted for 36.0%. [Gender identification data missing,  $n = 2$ ]. Participants identifying as White comprised the largest racial/ethnic group (64.0%) followed by Asians (22.0%), Mexican/Chicano (14.3%), Other Latino (6.7%), Black (4.3%), other race/ethnicity (3.3%), Native American (1.6%), Native Hawaiian/Pacific Islander (1.2%), and Puerto Rican (0.4%). Race/ethnicity data was missing for one participant. It is important to note that the sum of percentages exceeded 100% because participants were allowed to identify with multiple racial/ethnic groups on the surveys.

Nearly one-third (29.1%) of the participants were students in the School of Business while 16.5% were students in the School of Engineering. Nearly one-fifth (19.8%) of the participants were majoring in one or more of the Social Sciences within the College of Arts and Sciences while 16.1% of the participants were obtaining degrees in Mathematics and/or the Natural Sciences. Those studying the Humanities comprised 15.1% of the sample while only 3.5% of the participants were majoring in the Arts.

### *Materials*

The data that was used was compiled by pairing responses from the university's annual freshman survey and the university's annual senior survey in order to be able to make within-subjects comparisons from Time 1 (as incoming freshman undergraduate students) to Time 2 (as graduating college seniors) as a method of measuring changes in compassion while the students attended the university. The freshman survey was sent out after the incoming freshman had confirmed their enrollment in the university and completed prior to the start of the Fall quarter classes. The senior survey was administered during the Spring quarter before graduation.

Compassion was operationalized and measured using the Santa Clara Brief Compassion Scale (Hwang, Plante, & Lackey, 2008). The 5 item brief scale (e.g., "I often have tender feelings toward people (strangers) when they seem to be in need.") has been used in previous research having found to be reliable with Cronbach's alpha at .90 and valid with a correlation of .96 with the more established and larger parent scale (i.e., Sprecher and Fehr's Compassionate Love Scale; Hwang et al., 2008). In addition to the Santa Clara Brief Compassion Scale,

the freshman survey included questions regarding demographic and background data (i.e., gender, race/ethnicity, high school GPA, SAT/ACT scores, racial/ethnic composition of one's neighborhood/social circle, etc.), the activities they participated in during high school, reasons for attending college, the type of high school they attended (i.e., private independent school, private Catholic school, public school, etc.), their intentions regarding their activities while at the university (i.e., intended major, intention to join a fraternity/sorority, etc.), as well as their values, beliefs, and attitudes.

Like the freshman survey, the senior survey was comprised of the Santa Clara Brief Compassion Scale and questions focused on the participants' demographic data (i.e., gender, race/ethnicity, academic major, college GPA, etc.), behaviors in college (i.e. activities, involvement, etc.), personal values, attitudes, and future personal and professional goals.

#### *Procedure*

The data was analyzed through descriptive statistics, correlational analysis, multiple regression analyses, and Analysis of Covariance (ANCOVA) procedures.

During the analysis of the data, the emphasis was placed on behavior and/or action-oriented variables (i.e., frequency of attendance of religious services, membership in a sorority or fraternity, etc.) rather than beliefs or attitudes because of demand characteristics associated with self-report data. Most of the variables examined were taken from the senior survey because of the priority given to studying what parts of the values-based education offered at XXXXX University influences changes and development in compassion and the assumption that the relationship between the participant's environment and experiences and their compassion scores would be accounted for in their compassion scale score from the freshman survey.

The two exceptions to the focus on behavior and action-oriented variables were the participants' political identification as they entered and as they left the university (i.e., how they identified themselves on the political spectrum) and their perceptions regarding whether they as individuals were valued by the university community.

We focused our data analysis strategy by using multiple regression approaches to highlight variables associated with pre to post changes in compassion scores over the course of the college years. This approach helped to best clarify the correlated influence of relevant variables on compassion change during their college experience and is supported by previous research (Gliner, Morgan, & Harmon, 2003; Linn & Slinde, 1977). While various approaches to multiple regression analysis can be conducted that have potential advantages and disadvantages (Courville & Thompson, 2001; Kraha, Turner, Nimon, Zientek, & Henson, 2012; Thompson, 2001), we felt that our stepwise approach helped to best clarify our findings in understandable ways by first considering the influence of initial freshmen level compassion scores regressed on senior compassion scores and then adding salient research supported variables of interest one step at a time examining the additional variance accounted for after each variable step was entered.

## Results

### *Descriptive Statistics*

As Table 1 demonstrates, there was a decrease from Time 1 to Time 2 in the percentage of participants who reported attending religious services frequently in the previous year while there was an increase in the number of participants who reported either not attending religious services at all in the past year or attending them occasionally.

[Insert Table 1 about here]

Participants demonstrated a tendency to shift left politically over the course of their time as undergraduate students, as shown in Table 2. Although there was a slight increase in the number of students who politically identified as far-right, the percentage of students identifying as conservative or moderate decreased while the percentage of students identifying as liberal or left leaning increased.

[Insert Table 2 about here]

Most of the participants reported performing community service as part of one of their classes while enrolled at the university. Nearly one fourth of the participants (23.2%) reported that their classes frequently included engagement in community based service learning while nearly two-thirds (63.1%) of the participants

reported occasional community based service involvement as part of a class. Only 13.6% of the students reported that they had not been involved in community based service as part of one of their classes while attending the university. Nearly half of the participants (46.4%) attended at least one workshop focused on racial/cultural awareness while an undergraduate student at the university. The vast majority of the participants reported feeling like they were a valued part of the university community with 45.0% of the participants agreeing and 45.4% of participants strongly agreeing with the statement: “I feel valued at this institution”. Only 1.2% of participants had strong feelings of not being valued at the university.

### *Inferential Statistics*

Correlational analysis found that there was a strong, statistically significant correlation ( $r = .50, p < .01$ ) between participants’ senior compassion scale scores and their freshman compassion scale scores. As displayed in Table 3, both senior and freshman compassion scale scores were modestly but significantly correlated (i.e.,  $r$ ’s between .19 to .25 for correlations with senior compassion scores and .08 to .19 for correlations with freshman compassion scores) with diversity workshop attendance, connection to the university community, religious service attendance, political views at the end of senior year, and academic-related community service participation. There were more modest, yet still significant, correlations (i.e.,  $r$ ’s between -.09 and .11) between all of the behavior/action-oriented variables, with the exception of senior political views and academic-related community service participation. There was no correlation between senior political views and participation in community service as part of a class.

[Insert Table 3 about here]

Multiple regression analysis, as demonstrated in Table 4, established a multiple regression model ( $R^2 = .35, F(6, 482) = 42.25, p < .001$ ) of 6 predictors of students’ scores on the senior compassion scale that included freshman compassion scale score, attendance at a diversity workshop, senior year political views, frequency of religious service attendance, feeling valued and connected to the university community, and participation in

community service as part of an academic class. These predictors accounted for an additional 10% of the variance in compassion scores at the time of graduation beyond what was associated with freshman compassion scores. The regression analysis found that gender, freshman political views, freshman frequency of religious service attendance, reported hours per week spent in prayer/meditation, college GPA, reported hours spent studying/doing homework, and holding a full-time job during an academic term did not explain any further amount of variance in senior compassion scale scores.

[Insert Table 4 about here]

Similarly, many social or extracurricular behavioral variables were also eliminated as predictors. Frequency of alcohol consumption, fraternity/sorority membership, participation in an ethnic/racial student organization, reported hours per week spent partying, and having had a roommate of another race/ethnicity all failed to account for any additional, significant amount of variance in compassion scores.

[Insert Table 5 about here]

As shown in Table 5, results from an analysis of covariance (ANCOVA) indicated that certain fields of study are associated with higher compassion scores at the end of the participant's college career, even after taking freshman compassion scores into account. Analysis found that there was a significant effect of degree field on senior compassion scores after controlling for freshman compassion scores,  $F(5) = 4.92, p < .001$ . Participants studying within the Social Sciences displayed the highest compassion scores (Mean = 3.69), followed by those in Math and the Natural Sciences (Mean = 3.43). Students in the School of Engineering displayed the lowest compassion scores (Mean = 3.10).

### Discussion

Freshman compassion scores were the strongest predictor of senior compassion scores, accounting for 25% of the variance in senior compassion scores. While this highlights that compassion development before college is important, this finding validates the idea that the undergraduate years are a window of potential influence in compassion cultivation as three-fourths of the variance in compassion at the time of graduation was unable to be attributed to the amount of compassion already present at the start of freshman year. When several key variables

were entered into the regression equation (i.e., diversity workshop attendance, senior political views, religious attendance, feeling valued by the university, and curriculum based community service), an additional 10% of the variance in senior compassion scores were accounted for above the variance accounted for by freshmen compassion scores. The influence of these salient variables are discussed below.

#### *Feeling Included is Associated with Compassion for Others*

An overwhelming majority of the sample reported feeling valued at the university, though some felt it more strongly than others. Feeling like a valued part of the university community was positively correlated with senior compassion and also accounted for a small, but statistically significant amount of the variance in the multiple regression equation. Due to the study design, we are unable to establish directionality or rule out confounding variables but two potential explanations of this finding might posit that students who are becoming more compassionate may feel increasingly valued at a university that strongly emphasizes being compassionate or that feeling like one is a valued part of the university community may incline students to align themselves to other interests or qualities valued by the university.

#### *Diversity Training is Associated with Compassion*

Slightly less than half of the sample had attended a racial/cultural awareness workshop while attending the university. Diversity training accounted for the second largest amount of variance in the regression model, after freshman compassion scores, suggesting the importance of this experience to any university seeking to cultivate compassion among its students. Because diversity workshops are typically held as optional campus events, attendance of diversity training may be impacted by a self-selecting exposure to alternate perspectives and ideas, thus potentially increasing compassion among those who may be predisposed to be more compassionate already.

#### *Community Service Training is Associated with Compassion*

The large percentage of the sample who performed community service as part of one of their classes can be explained by XXXXX's implementation of a modified core curriculum for freshman entering in Fall 2009 and all subsequent cohort years. The updated core curriculum added participation in at least one class with a

community service learning component as a graduation requirement. Additionally, the differences between students in the frequency of performing community service as part of a class might be explained by the curriculum differences between academic areas. Some fields of study, such as Urban Education, Sociology, and Psychology, might offer or require more classes with community service components than other fields of study such as Philosophy, Chemistry, or Engineering. If so, this might suggest an overlap between community service learning and area of study that could be examined in future research.

### *Religious Attendance and Left Political Leanings are Associated with Compassion*

Our finding that attendance of religious services decreases overall in college is consistent with past research that have found that the percentage of students who frequently attend religious services tends to decrease and the percentages of students who attend occasionally and those who do not attend at all increase (Astin, Astin, & Lindholm, 2010). Our findings also support the results of previous research stating that undergraduate students tend to experience a slight shift to the left politically over the course of college (Mariani & Hewitt, 2008). At the time of graduation, left-leaning political views and frequent attendance of religious services during the previous year were positively correlated with high compassion at the time of the senior survey. The amount of variance in senior compassion that was accounted for by the combination of senior political views, attendance of religious services, and participation in community service learning provides support the notion, suggested by previous research, that social justice focused engagement with activities that support and encourage care for the marginalized, disadvantaged, and oppressed may likely nurture and support compassion development (Bernacki & Jaeger, 2008; Gorman, Duffy, & Heffenan, 1994; Jones & Abes, 2004; Jones & Hill, 2001; Lovette-Colyer, 2014).

### *College Major is Associated with Compassion*

Similarly, as an academic area primarily devoted to understanding aspects of human behavior, it is not particularly surprising that students within the social sciences had the highest compassion scores - even after controlling for freshman compassion scores - suggesting that some aspect of these students' field of study might have an impact on compassion during college. Those in mathematics and the natural sciences displayed the

second highest senior compassion scores after controlling for freshman compassion scores. One possible explanation for this result is that studying within either the social or natural sciences might facilitate compassion development through a possible shared emphasis of using the scientific method to find ways of helping people. It is possible that studying within the natural sciences cultivates a similar interest in discovering solutions to the various issues affecting people as studying within the social sciences. This idea could also suggest that the low compassion found among engineering and business students is a result of coursework that may tend to be less “people-oriented” and more “goal-oriented”. However, it should be noted that this potential explanation could fail to account for why students in the Humanities were found to be slightly lower in compassion than the Business students after controlling for compassion at the time of entry to the university. The researchers have little explanation for why the students in Humanities, who study subjects such as History and Modern Languages, would have relatively low compassion scores compared to students in other degree fields. It should also be noted that the analysis of academic disciplines was completed separately through analysis of covariance procedures rather than included in the multiple regression model.

#### *Social Activities are Not Associated with Compassion*

Contrary to previous research that identified participating in “Greek life” and “partying behavior” as predictive of lower compassion and decreases in compassion (Lovette-Colyer, 2013; XXXX, under review), this study found that these behaviors did not account for any significant amount of the variance in compassion change. Interestingly, XXXX (under review) drew from the same senior survey data as this study but found an inverse correlation between compassion and these behaviors. This suggests the possibility that undergraduate students who end up participating in “Greek life” and “partying behavior” might enter with lower compassion and graduate with similarly low compassion, thus explaining the lack of change.

While gender accounted for a statistically significant amount of variance in senior compassion after controlling only for freshman compassion, gender accounted for no additional amount of variance in compassion after all of the variables were accounted for in the regression model. This suggests the possibility that other variables may act as moderators between gender and compassion.

*Limitations and Future Directions*

Our study had several limitations. First, all participants were self-selected in that some agreed to complete all measures while others chose not to do so. Thus, our data included a fairly high rate of attrition in that a large number of participants who completed the incoming freshman survey chose not to complete the senior exiting survey. Secondly, we were reliant on data that was self-reported and may have been impacted by demand characteristics and social desirability bias. Additionally, scores on the compassion scale were also susceptible to potential desirability bias and possible floor and ceiling effects due to the face validity of the compassion measure. As a large and descriptive study surveying college students, the variables measured had high face validity and thus susceptible to potential bias. Lastly, the external validity of our findings is limited as our study was limited to participants at one university assessed with only three graduating classes. Despite these limitations, this study offers an important foundation for future research to build upon.

Future research on the topic of cultivating compassion in undergraduates is important and should continue. Studies may wish to replicate this project by using participants at diverse undergraduate settings for example. They may also wish to further examine the impact of degree field (i.e., social sciences, humanities, business, etc.) by incorporating it into a multiple regression analysis with the other variables. Additionally, future research is needed to better clarify which findings are reliable and which may be spurious. There is clearly an important need for research based on more than self-report data with high demand characteristics as well as a more detailed analysis of the relationships between compassion and the variables highlighted in this study. In the future, research on this topic should also seek to examine the long-term impact of an undergraduate holistic education in order to understand the sustainability of compassion cultivated during undergraduate education.



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Table 1

Reported Attendance of Religious Services during the Previous Year

	Time 1 (Freshman Survey)*	Time 2 (Senior Survey)**
	<i>n</i>	<i>n</i>
Not At All	74 (15.1%)	180 (36.7%)
Occasionally	185 (37.7%)	222 (45.2%)
Frequently	228 (46.4%)	89 (18.1%)

\*Missing: n = 4 (0.8%)

\*\* p < .001

Table 2

Reported Political Identity as Incoming Freshmen and Graduating Seniors\*\*\*

	Time 1 (Freshman Survey)*	Time 2 (Senior Survey)**
	<i>n</i>	<i>n</i>
Far-Right	0 (0.0%)	6 (1.2%)
Conservative	90 (18.3%)	81 (16.5%)
“Middle-of-the-Road”	198 (40.3%)	181 (36.9%)
Liberal	177 (36.0%)	209 (42.6%)
Far-Left	6 (1.2%)	12 (2.4%)

\*Missing: n = 20 (4.1%)

\*\*Missing: n = 2 (0.4%)

\*\*\* p < .05

Table 3

Summary of Correlations

	1	2	3	4	5	6
1						
2	.50**					
3	.20**	.13**				
4	.25**	.22**	.17**			
5	.24**	.16**	.10*	.11*		
6	.23**	.19**	.13**	.11**	.21**	
7	.19**	.08*	-.09*	-.15**	.11**	.040

\*  $p < .05$

\*\*  $p < .01$

1 = Senior Compassion Score

2 = Freshman Compassion Score

3 = Feeling Values by the University

4 = Religious Service Attendance

5 = Racial/Cultural Awareness Attendance

6 = Community Service Participation

7 = Senior Political Leanings

**Table 4**  
**Multiple Regression Model Summary**

<b>Change Statistics</b>									
Mode	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	Std. Error of the Estimate	<i>R</i> <sup>2</sup> Change	<i>F</i> Change	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	Sig. <i>F</i> Change
1	.502 <sup>a</sup>	.252	.251	.85950	.252	164.230	1	487	.0002
2	.530 <sup>b</sup>	.281	.278	.84392	.028	19.145	1	486	.000
3	.546 <sup>c</sup>	.298	.294	.83455	.017	11.973	1	485	.001
4	.568 <sup>d</sup>	.322	.317	.82063	.025	17.602	1	484	.000
5	.580 <sup>e</sup>	.337	.330	.81289	.014	10.257	1	483	.001
6	.587 <sup>f</sup>	.345	.337	.80876	.008	5.949	1	482	.015

a. Predictors: (Constant), Freshman Compassion Scale Score

b. Predictors: (Constant), Freshman Compassion Scale Score, Diversity Workshop Attendance

c. Predictors: (Constant), Freshman Compassion Scale Score, Diversity Workshop Attendance, Senior Political Views

d. Predictors: (Constant), Freshman Compassion Scale Score, Diversity Workshop Attendance, Senior Political Views, Religious Service Attendance

e. Predictors (Constant), Freshman Compassion Scale Score, Diversity Workshop Attendance, Senior Political Views, Religious Service Attendance, Connection to University Community

Table 5 ANOVA Summary

## Mean Compassion Scores by Academic Major

Academic Major	<i>n</i>	<i>Mean</i>	<i>Standard error</i>
Arts	17	3.28	.21
Business	143	3.34	.07
Engineering	81	3.09	.09
Humanities	74	3.25	.10
Natural Science/Math	79	3.42	.10
Social Science	97	3.69	.09

**RESPONSES TO REVIEWS**

Thank you for the thoughtful and careful review of our manuscript, *Nurturing Compassion Development among College Students: A Longitudinal Study*. The suggested revisions have been made and attended to and we believe that the edits greatly improve our paper. We hope that you will agree and proceed with publication in the *Journal of College and Character*.

In accordance with your request and instructions we have detailed the changes made to the manuscript based on each comment offered by the three reviewers.

**Reviewer 1**

1. The reviewer instructed us to “temper” our claim that our study is the “first” of its kind instructing us to avoid “first” statements. The reviewer requested this change in both the abstract and on page 5 of the manuscript. We have now done so.
2. The reviewer suggested that we add the fact that 10% of variability in seniors’ level of compassion above initial measures be included in the body of the paper. We have done this which can now be found on page 11 as well as page 13.
3. The reviewer felt that our first paragraph on page 3 was too long. We have now broken it up to make it shorter.
4. The reviewer asked us to provide a reference for the comment on page 3 that religiously affiliated colleges often include comments about social justice in their mission statements. We have done so now noted on page 3.
5. The reviewer asked us to make the purpose of our more generalizable by not tying it to the school where we collected our data. We have done so and edited page 6 accordingly.
6. The reviewer asked us to support the directions of our hypotheses at the end of the introduction section on page 6. We have included several key references that support our hypotheses directions.
7. The reviewer questioned the missing 2 people noted on page 6. We have clarified this by making clear that only 2 of our n = 491 sample had missing gender data. Thus, of all of our subjects, only 2 left out gender identification information.
8. The reviewer requested psychometric information about the Santa Clara Compassion Scale which we added and is now offered on page 7.
9. The reviewer asked to remove the first paragraph in the procedures section since the information in it (about IRB procedures and approval) is assumed. We did so on page 8.
10. The reviewer asked us to remove the brief paragraph about the relationship between college entry and exit compassion scores since they were not discussed elsewhere in the study. We have done so on page 8.
11. The reviewer asked us to support (and provide several references) to our choice to use multiple regression analysis which we have now done and can be found on page 9. Additional clarifications were added on page 11 and 13 too.
12. See 11 above.
13. The reviewer wondered about our cross sectional compassion results on senior compassion scores on page 11. The primary aim of this paper is the longitudinal results and not cross sectional results. We have another paper that features examination of the cross sectional senior scores that is being considered for publication as a separate paper elsewhere. So, the concerns expressed by this reviewer about highlighting cross sectional findings are found in a separate paper under review. The focus on this paper is the longitudinal results.
14. The reviewer suggests a better summary table of regression coefficients which has now been added with more clarity and consistent with comments also made by reviewer 3 as well.

15. The reviewer suggests changing the tables to be more aligned with APA style. This has been accomplished now also consistent with reviewer 3 comments too.
16. The reviewer suggested making more clear the relationship between social justice and compassion which has now been done mostly on page 14.

### **Reviewer 2**

1. The reviewer asked for more focus and clarity in the discussion suggestion using subheadings. This has been added to the manuscript and can be found on pages 12-16.
2. The reviewer asked that we make changes to the Tables to include more information on some tables (Table and 2) and less on others (Tables 4 and 5). This has been accomplished as suggested and is clearer and more streamlined focusing on the most critical results.
3. The reviewer asked for a general review of the results section in light of the edits made to the tables. This, along with suggestions from Reviewer 1, have been made in that section.
4. The reviewer asked about sharing the details of the compassion scale but mentioned concerns about copyright issues. The compassion scale was published elsewhere and is published in full from the original publication journal outlet which is, in fact, copyright protected. A compromise has been offered by giving more information about the scale (including a sample question as well as reliability/validity information) which was also consistent with feedback offered by Reviewer 1 (#8).

### **Reviewer 3**

1. Reviewer 1 asked for more clear research statements that are theoretical in framework. Edits have been made (also with the suggestions offered by Reviewer 1) that make our purpose more clear.
2. See above
3. The reviewer asked for more clarity about the reliability and validity of the Compassion scale. This was also suggested by reviewer 1 and has now been added.
4. The reviewer asks that the Tables be edited to conform with APA style. We have now done this as suggested by several reviewers.
5. The reviewer asked about the ANOVA procedure regarding student major and why we didn't include that variable in the multiple regression analysis. We conducted that variable separately since that variable was a categorical one and we felt that it was best to use ANOVA for categorical variables while using continuous variables in the regression analysis.